SCOPE OF WORK BASIC CONTRACT

CONTRACT TYPE [CHECK ONE]

☐ Specific Rate of Pay

☒ Cost Plus Fixed Fee

☐ Lump Sum

CONTRACT DATE: TBD

PROJECT NUMBER: BR 0703-333

PROJECT LOCATION: I-70 and Kipling Operation Improvements

PROJECT CODE: 16549

THE COMPLETE SCOPE OF WORK INCLUDES THIS DOCUMENT (ATTACHED TO THE CONTRACT FOR CONSULTANT SERVICES) AND, IF REFERENCED,

SECTION 1	PROJECT SPECIFIC INFORMATION	Dated:
SECTION 2	PROJECT MANAGEMENT AND COORDINATION	Dated:
SECTION 3	EXISTING FEATURES	Dated:
SECTION 4	REFERENCE ITEMS NEEDED BY THE CONSULTANT	Dated:
SECTION 5	GENERAL INFORMATION	Dated:
SECTION 6	PROJECT INITIATION AND CONTINUING REQUIREMENTS	Dated:
SECTION 7	PEL STUDY WORK TASK DESCRIPTIONS	Dated:
SECTION 8	CONTRACT CONCLUSION (CHECKLIST)	Dated:
APPENDICES		Dated:

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SECTION 1
PROJECT SPECIFIC INFORMATION

1 PROJECT BACKGROUND

The current interchange at Kipling I-70 and Kipling was constructed in 1967 and is located in the city limits of Wheat Ridge in Jefferson County. The interchange is currently a diamond interchange with two bridge structures (E-16-GX and E-16-GY) on I-70 over Kipling Street (State Highway 391). Bridge structures (E-16-GX and E-16-GY) have a sufficiency rating of 57.1 and 58.1 respectively as of July 1, 2006. The structures are a concrete slab and girder continuous (poured in place).

The Colorado Department of Transportation (CDOT) has decided to hire a consultant to provide an improved understanding of the interchange. The selected consultant team (hereafter referred to as the Consultant) shall evaluate the existing and future operating conditions and features of the interchange. In this project the scope of services to be provided by the Consultant shall produce a Planning Environmental Linkage (PEL) Report with the goal of identifying existing conditions, anticipated problem areas, and developing a range of improvements to reduce congestion and improve operations and safety of the interchange. The results of these efforts may ultimately be used to prepare National Environmental Policy Act (NEPA) studies and final design.

2 PROJECT GOALS

This project is intended to examine the need for the following improvements to the interchange, as well as producing design and funding, scheduling and phasing recommendations to achieve them:

A. Higher level-of-service operations

B. Bridge Replacement

C. Reconstruction to current design and operation standards

The objective of this project is to work with stakeholders to analyze and develop a range of improvements to reduce congestion and improve operational performance and safety at the interchange. The project will assist CDOT, public agencies, and resource agencies in identifying issues of importance to each respective agency.

The Consultant will produce documents and deliverables in a form that can be incorporated by reference, as appropriate, in subsequent NEPA document(s) as outlined in Appendix A to 23 CFR Part 450 – Linking the Transportation Planning and NEPA Processes.

3 PLANNED IMPROVEMENTS

This project is located on SH 70 at milepost 267.41 in Jefferson County.

4 WORK DURATION

The time period for the work described in this scope is approximately 365 calendar days.

5 CONSULTANT RESPONSIBILITY AND DUTIES

The Consultant is responsible for conducting project coordination, agency coordination, public participation, feasibility study conceptual design and alternatives analysis, environmental and design data collection and analysis~~, specifications, and estimate, and post design services~~ as described in the following sections.

6 WORK PRODUCT

The work in the scope of services for this project will be contracted on an individual Task Order basis, as needed and if needed as determined by the Department. The Department reserves the right to, at its sole discretion, decide to not issue task orders for any part of the work contained in this scope of services. The Consultant work products may include:

A. Reports
   a Traffic Analysis and System/Project Feasibility and Interchange Management Plan
   b Existing Conditions Report
   c Alternatives Selection Report
   d Planning Environmental Linkage Report

B. Project Coordination

C. Schedules

D. Meeting Minutes

Detailed work product requirements are described in the following sections. All work required to complete this Scope of Work requires the use of English Units.

7 WORK PRODUCT COMPLETION

All submittals must be accepted by the CDOT Contract Administrator or designee.

8 ADDITIONAL PROJECT INFORMATION

Additional information regarding this project is included in the following documents:

A. CDOT accident history data

B. Traffic Data

C. Geotechnical Drilling Information

D. As-constructed roadway, structure, and existing ROW plans of

E. Pavement Design Records

F. Structural Inspection Records

Copies of these documents may be obtained from CDOT Printing and Visual communications Center, Phone no. 303-757-9214, Room 117, 4201 East Arkansas Avenue, Denver, Colorado 80222. A moderate fee, determined by document size, will be charged. An additional charge will be added for requests by mail or for billing. Please provide a notice of two working days prior to obtaining the document(s) in person.

9 SCOPE OF WORK ORGANIZATION

This draft scope of work has been reviewed by the Department and reflects a plan of approach based on the known goals. One factor determining the selection of a consultant is the ability of that consultant to analyze the project goals, evaluate the work elements, and formulate a work plan. This process may produce new approaches or modification to the project work elements. Because of that, all consultants should be aware that the Final Scope of Work for a project will be produced with input from the selected Consultant.

SECTION 2
PROJECT MANAGEMENT AND COORDINATION

1 CDOT CONTACT

The Contract Administrator for this project is: Reza Akhavan Region 6
Regional Transportation Director.

Active day-to-day administration of the contract will be delegated to:

A. Name: Jay Hendrickson

B. Title: Resident Engineer

C. Address: 4670 Holly Street Unit D Denver Colorado 80216

D. Telephone: (303) 398-6749

E. Fax: (303) 398-6781

2 PROJECT COORDINATION

Coordination will be required with the following:

A. City of Wheat Ridge

B. Jefferson County

C. City of Arvada

D. Regional Transportation District (RTD)

E. Denver Regional Council of Governments (DRCOG)

F. Urban Drainage & Flood Control District (UD & FCD)

G. Environmental Protection Agency (EPA)

H. Federal Highway Administration (FHWA)

I. Federal Transit Authority (FTA)

J. Utilities

K. State and Federal Resource Agencies

The consultant should anticipate that a design which affects an agency will have to be accepted by that agency prior to its acceptance by the Colorado Department of Transportation. Submittals to affected agencies will be coordinated with CDOT.

SECTION 3
EXISTING FEATURES

1 STRUCTURES

E-16-GX, I-70 Westbound over SH 391 (Kipling Street)
E-16-GY, I-70 Eastbound over SH 391 (Kipling Street)

2 UTILITIES

Contact Utility Notification Center of Colorado (U.N.C.C.) at 1-800-922-1987

3 IRRIGATION DITCHES

There is no known irrigation ditch involvement at this time.

4 RAILROADS

There is no known railroad involvement at this time.

Note: The above is a list of the known features in the area. It should not be considered as complete. The Consultant should be alert to the existence of other possible conflicts.

SECTION 4

REFERENCE ITEMS NEEDED BY THE CONSULTANT

1 CURRENT CDOT MANUALS, SPECIFICATIONS, STANDARDS, ETC.

The consultant shall obtain and utilize the most recent CDOT adopted references including standards and specifications, manuals and software, electronic files of applicable standards, and all CDOT forms specified in this document or as directed by the CDOT/PM. A list of general reference material is provided in Appendix A.

SECTION 5
GENERAL INFORMATION

1 NOTICE TO PROCEED

Work will not commence until the written Notice-to-Proceed is issued by the State with certification from the Consultant that the work will be completed within the allotted time. Work may be required, night or day, on weekends, on holidays, or on split shifts. CDOT must concur in time lost reports prior to the time lost delays being subtracted from time charges. Subject to CDOT prior approval the time charged may exclude the time lost for:

A. Reviews and Approvals.

B. Response and Direction

2 PROJECT COORDINATION

A. Routine Working Contact

The routine working contact will be between the CDOT Project Manager (CDOT/PM) and the Consultant Project Manager (C/PM) as defined in Appendix B.

B. Project Manager Requirements

Each Project Manager will provide the others with the following:

a. A written synopsis or copy of their respective contacts (both by telephone and in person) with others.
b. Copies of pertinent written communications.

3 ROUTINE REPORTING AND BILLING

The Consultant will provide the following on a routine basis:

A. Coordination

Coordination of all contract activities by the C/PM

B. Periodic Reports and Billings

The periodic reports and billings required by CDOT Procedural Directive 400.2 (Monitoring Consultant Contracts).

C. Minutes of all Meetings:

The minutes will be completed and provided to the CDOT/PM within five (5) working days after the meeting. When a definable task is discussed during a meeting, the minutes will identify the "Action Item", the party responsible for accomplishing it, and the proposed completion date.

D. General Reports and Submittals

In general, all reports and submittals must be approved by CDOT prior to their content being utilized in follow-up work effort.

4 PERSONNEL QUALIFICATIONS

The Consultant Project Manager (C/PM) must be approved by the CDOT Contract Administrator. Certain tasks are required to be done by a Licensed Professional Engineer (PE) or a Professional Land Surveyor (PLS) who is registered with the Colorado State Board of Registration for Professional Engineers and Land Surveyors, National Institute for Certification in Engineering Technology (NICET). Other certifications may be required for project inspectors and testers.

5 CDOT COMPUTER/SOFTWARE INFORMATION

The consultant shall utilize the most recent CDOT adopted software. The primary software used by CDOT is as follows:

A. Earthwork	InRoads
B. Drafting/CADD	InRoads and Microstation with CDOT's formatting configurations and standards
C. Survey	CDOT Inroads TMOSS
D. Geometry	CDOT COGO (Coordinate Geometry)
E. Bridge	CDOT Staff Bridge software shall be used in either design or design check
F. Estimating	Transport (an AASHTO sponsored software)
G. Specifications	Microsoft Word
H. Traffic Operations	VISSIM and DYNASMART
I. Travel Demand Model	TransCAD
J. Traffic Signals	Synchro/Sim Traffic
K. Hydraulics	Hydrologic Engineering Center's River Analysis System (HEC-RAS)
L. Pavement Design	DARWin (AASHTO)
M. Scheduling	Microsoft Project
N. GIS	ESRI, ArcMap geodatabases (Projection: UTM NAD 83, Zone 13)
O. Noise Modeling	TNM v2.5
P. Misc	Microsoft Word, Excel, Power Point
Q. Reports	Adobe Acrobat 7.0 Professional, Microsoft Word

6 COMPUTER DATA COMPATIBILITY

The data format CDOT presently utilizes which Consultants shall be required to use for submitting roadway design data is: Inroads.

The data format used by the Consultant to submit surveying and photogrammetric data shall be as determined by the CDOT/PM in coordination with the respective Region PLS. The data format for submitting design computer files shall be compatible with the latest version of the adopted CDOT program. The Consultant shall immediately notify the CDOT/PM if the firm is unable to produce the desired format for any reason and cease work until the problem is resolved. Refer to Table 1, Submittals, for additional information regarding the InRoads and TMOSS formats and the acceptable transmittal media.

7 PROJECT DESIGN DATA AND STANDARDS

A. General:

Appendix A is a list of technical references applicable to CDOT work. The consultant is responsible for ensuring compliance with the latest CDOT adopted version of the listed references. Conflicts in criteria shall be resolved by the CDOT/PM.

SECTION 6

PROJECT INITIATION AND CONTINUING REQUIREMENTS

This list establishes the consultant's individual task responsibility. The consultant shall maintain the ability to perform all work tasks which are indicated below by an 'X' in the consultant column, in accordance with the forms and conditions contained herein, and the applicable CDOT standards. Selected work tasks shall be assigned only after coordination and consultation with CDOT. The Consultant is also responsible for coordinating the required work schedule for those tasks accomplished by CDOT and other agencies. The Consultant should review this entire section to identify applicable material. Contact the Colorado Department of Transportation/Project Manager (CDOT/PM) if clarification is required (see Section 2.1, CDOT Contact).

The following activities of communication, consensus building, project team reviews, conceptual design, data gathering, documentation, and formal public notice should be planned by the Consultant and coordinated with the CDOT/PM. The time of their accomplishment will overlap and parallel paths of activity should be planned to finish the development phase in accordance with the shortest possible schedule. The type and number of meetings, documents, etc., will depend on the category and characteristics of the project work. A project plan shall be developed by the Consultant which satisfies the requirements of the project development. This plan must be approved by the Contract Administrator (see Section 2.1, CDOT Contact) before starting the work.

		CDOT/ Other	Consultant
1	**PROJECT INITIATION AND CONTINUING REQUIREMENTS**		
A.	Initial Project Meeting	X	X
	An initial project kick-off meeting will be held, coordinated by the Consultant, and conducted by CDOT. The meeting will review the Project Management Plan, project scope, schedule, key milestones, and project study area boundary. The meeting may include an on-site inspection to familiarize the entire project team with the character and conditions of the area. The Consultant shall develop an invitation list in coordination with CDOT, send notices with a draft agenda, and provide meeting minutes to all those invited. The Consultant will facilitate a chartering session among CDOT, City of Wheat Ridge, City of Arvada, and Consultant team members to establish the project charter, including defining the team's purpose and establish critical success factors, goals, roles and responsibilities, operating guidelines, interpersonal behaviors, and other elements. The charter will be a written document that is signed by all participants.		
B.	Project Management Plan		X
	The Consultant shall submit a plan for managing the project, including work assignments, project schedule, document quality assurance program, administrative record, document and agency reviews, and other project needs.		
C.	Resource Review	X	X
	Consultant shall review relevant standards and specifications and document environmental requirements applicable to the project. This task shall include two meetings, one with CDOT and one with City of Wheat Ridge and City of Arvada representatives to discuss the initial work efforts of the project.		
D.	Project Study Area Boundary	X	X
	Preliminary project logical termini will be recommended by the consultant. The consultant will perform necessary research and data collection to propose a study area boundary and logical termini for use in scoping. The consultant will coordinate with		

CDOT, City of Wheat Ridge, and City of Arvada staff for recommendation to FHWA for approval.

E. Project Schedule _____ X

The initial project schedule, to be prepared by the Consultant, will be reviewed with the CDOT Project Manager and project team, and refined to provide detail as requested. Modifications shall be made for acceptance by CDOT. The schedule will be reviewed and discussed at regular intervals and updated as necessary. ~~The work in this scope is expected to take approximately 18 to 24 months to complete.~~

F. Obtain Necessary Trespass Rights and Permits X X

Some activities may require work on land not controlled by CDOT. In such cases CDOT shall obtain the necessary written permission to enter the premises. CDOT Form 730 may be used for this purpose. The Consultant will assist CDOT with work efforts consisting of the following activities:

a. Consultant shall develop ownership lists with names and telephone numbers of persons to contact for Right-of-Entry (ROE). Prepare initial mailing list from this effort.

b. CDOT shall prepare ROEs for 1st tier properties for field work and other activities as they arise.

c. CDOT shall track status of ROEs, when sent, when returned, approved or rejected, conditions, other interested parties and tenants, etc. The ROEs shall apply to CDOT and Consultant personnel.

d. Consultant shall obtain permits, as required, for fieldwork activities.

G. Plan and arrange Required Traffic Control _____ X

Consultant field activities that interfere with traffic operations within existing roadways will require control of traffic. The Consultant will plan and provide any required traffic control for the survey, testing, or the design process. Traffic control operations will be in accordance with the MUTCD. The proposed Method for Handling Traffic (MHT) must be submitted to the CDOT/PM. Also, certification of the Traffic Control Supervisor as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) or as a TCS (Traffic Control Supervisor) by the Colorado Contractors Association (CCA) shall be required.

The Consultant will work directly with CDOT personnel to prepare and submit appropriate basic traffic control plans for work tasks which may be required and are within traveled roadway to CDOT for approval. Any work within the City of Wheat Ridge or City of Arvada's right of way will require a permit and traffic control plan approved in advance by the City of Wheat Ridge or the City of Arvada.

H. Progress Meetings X X

CDOT and the Consultant will meet at regular intervals, to coordinate and track work efforts, progress and issues, and to work towards resolution of potential problems. The Consultant Project Manager shall provide a status report of the project schedule and budget at regular intervals. The Consultant Project Manager shall conduct the meetings, send meeting notices, agendas and handout materials, and prepare and distribute meeting minutes. The minutes of each meeting shall track and report progress on action items identified during previous meetings. Team meetings will be organized as follows:

a. Project Team Meetings:

Project Team consists of CDOT and Consultant Project Managers. Team will meet on a bi-weekly basis to review status of and manage the overall project progress, schedule, and work plan. Team meetings will be used to conduct primary evaluations and decisions required during the EA process.

b. Technical Team Meetings:

Technical Team consists of CDOT, City of Wheat Ridge, City of Arvada, and Consultant technical task leaders responsible for coordination of technical information as needed Team will meet on a 6-week basis to review status and progress of project technical materials and conceptual designs.

I. Public Involvement Coordination X X

CDOT will assist the Consultant in organizing all Stakeholder meetings and Public Meetings. The Consultant is responsible for creating and providing all materials for these meetings. It is anticipated that a minimum of two meetings between the Consultant and the Public-Stakeholders will be necessary in this Task. In addition to this, it is anticipated that numerous other contacts will need to be made with all of the public agency stakeholders, both at the staff level and the elected official level, to communicate and negotiate the stakeholders' concerns about specific problems and visions for the corridor.

The Consultant shall provide the presentation aids, and help conduct the following meetings:

a. General Public Meeting (information and workshops)

The format of these meetings will be dictated by the project and goals for the meetings. These meetings may be used to establish communications with the public, add to the "contact list", and gather information regarding local concerns. The meetings may also take the form of a work session or workshop with the affected parties.

b. Resource Agency Meetings (information and workshops)

The format of these meetings will be dictated by the project and goals for the meetings. These meetings may be used to establish communications with the resource agencies, add to the "contact list", and gather information regarding resources of concern. The meetings may also take the form of a work session or workshop with the resource agencies.

SECTION 7

PEL STUDY WORK TASK DESCRIPTIONS

The Study will be conducted in accordance with the Statewide and Metropolitan Planning Regulation 23 CFR 450. The provisions linking planning and NEPA presented in Section .318 and Appendix A of 23 CFR 450 are to be followed. The findings of the PEL Study will establish the Purpose and Need, subsequent phase study area and reasonable alternatives, logical termini and independent utility, and programming priorities/timeframes/funding to be used in updating transportation plans and transportation improvement programs (TIPs).

The Study will include development and evaluation of alternatives based on a consideration of Purpose and Need, geometric, planning and environmental factors, the location of communities and other developed areas, a traffic ~~and toll feasibility analysis,~~ and public and agency input. PEL Study alternatives will initially be developed based on secondary source or available environmental and community data, and will be refined through agency and public input and other on-going studies. Environmental and community data will be updated for the refined corridors through photo interpretation and selected ground-truthing. The intent of the PEL Study analysis is not to identify impacts, but rather to identify potential roadblocks for those PEL Study alternatives which provide the best balance in meeting the Purpose and Need and avoiding/minimizing the potential to affect resources during subsequent study phases.

The Study will be developed and documented in a form that can be incorporated by reference, as appropriate, in subsequent NEPA document(s) as outlined in Appendix X to 23 CFR Part 450 – Linking the Transportation Planning and NEPA Processes. All final deliverables identified in this contract will be of such quality that they could be incorporated directly or by reference into these NEPA documents. The study process will comply with the requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

This list establishes the consultant's individual task responsibility. The consultant shall maintain the ability to perform all work tasks which are indicated below by an 'X' in the consultant column, in accordance with the forms and conditions contained herein, and the applicable CDOT standards. Selected work tasks shall be assigned only after coordination and consultation with CDOT. The Consultant is also responsible for coordinating the required work schedule for those tasks accomplished by CDOT and other agencies. The Consultant should review this entire section to identify applicable material. Contact the Colorado Department of Transportation/Project Manager (CDOT/PM) if clarification is required (see Section 2.1, CDOT Contact).

The following activities of communication, consensus building, project team reviews, conceptual design, data gathering, documentation, and formal public notice should be planned by the Consultant and coordinated with the CDOT/PM. The time of their accomplishment will overlap and parallel paths of activity should be planned to finish the development phase in accordance with the shortest possible schedule. The type and number of meetings, documents, etc., will depend on the category and characteristics of the project work. A project plan shall be developed by the Consultant which satisfies the requirements of the project development. This plan must be approved by the Contract Administrator (see Section 2.1, CDOT Contact) before starting the work.

		CDOT/ Other	**Consultant**
1	**EXISTING CONDITIONS REPORT**		
	During the development of the environmental document, conceptual design efforts will be required to develop and refine alternatives for later inclusion into the NEPA screening process. Conceptual design efforts will include the following:		
	A. Evaluation of Existing Roadway Conditions		
	a Acquire available construction As-Built files, records, and information for the following:	_____	X
	i Accident records		

ii Freeway and street geometry

iii Drainage and floodplain conditions

iv Structure conditions

v Lighting

vi Traffic signals

vii Pedestrian and bike facilities

viii Transit (bus stop) facilities

~~b Initial geology investigation _____ X~~

~~The Consultant shall conduct and document a thorough investigation of the project area to determine existing geologic conditions including but not limited to soil maps, major excavations, unsatisfactory sub-grade materials, present and potential subsidence, consideration and description of the water table (depth/gradient), etc. Preliminary borings (assume 8) will be taken to evaluate the condition of the pavement sub-grade structure.~~

~~c Initial utility investigation _____ X~~

~~The Consultant shall conduct and document an investigation of the project area to determine existing utility conditions within the project limits. As part of this investigation the Consultant will collect utility location key maps for all utilities in the project area in coordination with CDOT Region 6 utilities specialist, identify all known utilities, ownership, type, size, and special conditions to consider should utility relocation be required, and research and obtain copies of utility easements (public and private) and utility franchise agreements to determine conditions under which the utility was established in its present location (e.g. by revocable permit or by a privately owned easement).~~

~~As part of the preliminary field survey planimetric mapping requirements, above ground utilities such as poles, manholes, valves, pedestals, guy wires, and other visible utility features will be located.~~

b. Existing Environmental Conditions _____ X

Conduct an environmental scan and list of critical environmental issues within the corridor that include the following tasks:
• Map environmental resources and prepare a list of environmental issues.
Include, at a minimum:
– Floodways and 100-year flood plain boundaries
– Likely locations of wetlands
– Known Archaeological and Paleontological sites
– Mines
– Hazardous waste sites
– Community or public wells
– Historical buildings, sites, and districts
– Rivers and lakes (identifying any designated wild and scenic rivers)
– State and national forests

– Wildlife reserves
– Critical wildlife habitat
– Threatened and endangered species (locations or likely presence)
– Public parks
– Prime agricultural land
– Barrier effect
– Pedestrian and bicycle access
– Noise
– Air Quality
– Neighborhood/business displacement
• Identify those areas expected to require further analysis for NEPA purposes.
• Prepare an environmental scan report for CDOT, resource agency, and public review.
• Identify and describe any features that may require context sensitivity.
Expected Products (Results)
• An environmental scan map of key socioeconomic and environmental resources;
• A list of environmental issues within the corridor, and identification of areas that require further analysis.
• A report summarizing the results of the research of land uses and other characteristics of the region. The report should include:
– Community profile, including population, growth trends, and employment trends, for use in future forecasts
– Current land uses
– Planned land uses incorporating both City's comprehensive plans, urban renewal plans, TOD plans, etc.
– Historical and cultural buildings and site

c. Existing conditions summary _____ X

Summarize findings of existing roadway conditions in a graphical plan set (Geometric Health Report). Plans (11" x 17", scale: 1" = 50') will be based on aerial photography of the project limits. A ranking system (Low/Medium/High) will be used to compare existing conditions to the specific design criteria for the project limits. Location of comparisons will be charted and indicated on the plan set.

The Geometric Health Report and supporting summary information will be included in the existing roadway structures section of environmental document.

A summary of findings from the initial geology and initial utility investigations will be included in the environmental existing conditions data submittal document (see Section 9.1.A Preliminary Data Submission).

B. Traffic Study

a Traffic data collection _____ X

The Consultant shall obtain current traffic counts for the project limits and surrounding roadway network impacted by the project to evaluate the existing traffic operations. Available traffic data shall be compiled from various state and municipal sources including CDOT automated traffic recorder locations.

The Consultant shall conduct a traffic count program to facilitate level of service evaluation at the I-70/Kipling St. interchange ramp terminals and at relevant strategic major arterial intersections. Major arterial intersection locations to be evaluated are to be determined by the Consultant in coordination with CDOT and the City of

Wheat Ridge. Daily vehicle classification counts will be collected at relevant strategic locations at the I-70/Kipling St. interchange, and AM and PM peak hour turning movement counts will be collected at relevant strategic local intersections on two consecutive weekdays. Classification count and intersection turning movement count locations are to be determined by the Consultant in coordination with CDOT, and the City of Wheat Ridge. Daily traffic counts shall be completed on mainline I-70 and at the Kipling St. interchange on and off ramps to evaluate merge, diverge, and weave operations. To assist in the evaluation of potential neighborhood traffic impacts, up to twelve 48-hour speed/volume counts will be conducted on neighborhood streets.

The Consultant shall utilize information from the I-70/Kipling St. Interchange Existing Condition Traffic Analysis Report prepared by CDOT R6 Traffic.

The Study shall include alternate routes, accident history, congestion, effects of interchange on the existing interstate and highway system, effects on the adjacent interchanges, economic development impact, and local commitment to improving local roadways.

b Travel demand forecasting _____ X

Travel demand modeling shall begin at the same time as data collection. The consultant will utilize the adopted 2035 regional DRCOG model, COMPASS, and develop a sub-area model specific to the I-70 and Kipling St. interchange. The new COMPASS model has a more refined transportation analysis zone structure than previous models, so the Consultant shall assume that extensive zone restructuring and network refinement is not required but that some network and TAZ refinement is expected. While the DRCOG model does contain a complex transit component, it is not the intent of this scope of work to duplicate efforts of transit focused projects in the vicinity of the project limits. Therefore, no specific transit modeling is included. The consultant shall be responsible for performing "reasonableness" checks on information developed and derived from use of the DRCOG model. The primary product of this work will be 2035 travel demand forecasts approved for study use by DRCOG. These forecasts will be used to develop 2035 traffic volumes on mainline I-70 and other major arterials as well as turning movements at signalized and unsignalized intersections and freeway ramp terminals. The Consultant shall use the approved DRCOG data sets and road network to ensure that the traffic analysis is compatible with the NEPA process.

c Traffic operations _____ X

Traffic operational analysis will include an evaluation of the existing conditions as well as a 2035 analysis for the No-Action and a preferred set of alternatives. It is recommended the Consultant use the DynasmartP/DynusT model that exists with DRCOG to aid on larger scale planning and operational analysis. This model should be used to help understand the regional distribution of traffic, possible diversions for different design alternatives and to help determine the limits of the micro-simulation analysis.

It is anticipated that Synchro will be used for evaluation of intersection operations and to serve as a basis for the development of a system wide micro-simulation model. The Consultant shall use a VISSIM micro- simulation model to evaluate the traffic operations of the complete roadway system and report the agreed upon measures-of-effectiveness (MOE's) for the existing conditions, No-Action and preferred set of alternative. Site specific operational analysis (i.e. turning movement delays, weaving analysis, queue length determination, etc) may also be required at

strategic locations within the I-70 and Kipling Street interchange to help identify interim improvements that may provide operational benefits while remaining consistent with the preferred alternative. Specific locations will be determined by the Consultant in coordination with CDOT, the City of Wheat Ridge, and the City of Arvada. The Consultant is required to follow the guidelines provided in the FHWA Traffic Analysis Tools for methods for collecting traffic data, setting up and calibrating the micro-simulation models. The Consultant will also be required to coordinate with CDOT traffic and FHWA at key milestones in the traffic modeling and approval process (i.e. model validation and calibration, MOE selections, etc) before additional work proceeds.

In addition, consideration shall be made for multimodal and maximum capacity corridor build-out. The data from these analyses shall be used to aid in the selection of the preferred alternative.

d Problem identification _____ X

Based on the initial traffic data collection, travel demand forecasting, and traffic operational analyses, the consultant shall identify traffic problem areas and determine the effects to the surrounding roadway network and intersections. This analysis shall consider traffic volumes, travel/access patterns, LOS, delays, travel times, and speeds in neighborhoods and other areas of anticipated traffic congestion. The Consultant shall coordinate this work with other studies in the immediate area (i.e., Cabela's EA, RTD Gold Line Project, etc).

e Pedestrian and Bicycle Facilities _____ X

The Consultant shall also analyze existing bicycle and pedestrian facilities for safety, adequacy, connectivity, and Americans with Disabilities Act Accessibility requirements and make recommendations for improvements accordance with the City of Wheat Ridge's Bicycle and Pedestrian Master Plan.

~~f Documentation _____ X~~

~~The Consultant shall use the information from the traffic study to create a summary report that will be used in the CDOT 1601 Feasibility Study to be prepared under a later task order for submittal to the Transportation Commission if the NEPA process determines that major improvements to the I-70 and Kipling St. interchange are necessary~~.

C. Safety Assessment Report _____ X

The consultant shall obtain all available Safety Assessment Reports from CDOT which identify existing safety problems within the project limits, available on the CDOT website. In the alternatives evaluation portion of the PEL Study and of the EA, and any other sections that pertain to Safety, the consultant shall specifically identify how the "Build" alternatives propose to mitigate the existing safety problems. If CDOT or the consultant deem that existing available traffic safety reports are outdated and need to be updated; the consultant shall prepare a traffic safety assessment report in accordance with CDOT standards. CDOT shall provide all data and statistical summaries necessary to complete the report.

2 **DEVELOP A STATEMENT OF PURPOSE AND NEED AND IDENTIFY GOALS FOR THE INTERCHANGE**

Develop an Executive Summary containing the following: _____ X

a. Identify the visions CDOT and each jurisdiction have for the future of the interchange and points of disagreement and congruence.

b. Refer to data identified in the Existing Conditions Report regarding existing and expected deficiencies in the transportation system serving the study area to compile a list of system deficiencies. Where possible, locate the deficiencies on a base map for use at the public meetings.

c. Reference the list of issues that resulted from contacts with stakeholders and general knowledge of the corridor to identify a list of key needs in the corridor.

d. Prepare a preliminary list of existing and anticipated deficiencies at the interchange. The list should describe the existing or anticipated deficiencies in the transportation system and the growth or changing needs in the study area. Prepare visual displays summarizing data compiled to date. Include key factors including the preliminary list of deficiencies already identified.

e. Produce a written statement of purpose and need. This statement should be an "umbrella" statement for the interchange, based on identification of needs and deficiencies. The statement should reflect the context sensitivity of the study area's communities to help reach their transportation goals by encouraging the consideration of land use, transportation, environmental and infrastructure needs in an integrated manner. It should include the following:

   a Description of project location, length, termini, and a definition of the project study area.
   b Description of existing transportation facilities and services, including transit, highway, bus service, park-n-Rides, bicycles and pedestrian, etc.
   c Identification of specific transportation problems and deficiencies (interchange, highway, pedestrian, bicycle, travel times, and transit).
   d System linkage information.
   e Existing and future capacity traffic projections from DRCOG.
   f Social, economic, and environmental justice issues related to purpose and need.
   g Safety problems.
   h A summary of previous and current transportation studies community plans, and planning efforts relevant to the project.

f. Identify goals for the interchange.

3 ALTERNATIVE SELECTION REPORT

A. Alternatives Analysis

a. Develop Preliminary Evaluation Criteria _____ X

Prior to development of reasonable alternatives, the Consultant will work with CDOT and the Stakeholders to develop preliminary evaluation criteria and submit the criteria to FHWA for review. Established criteria will be used to evaluate and screen the list of potential preliminary alternatives.

b. Develop Alternatives _____ X

The Consultant shall develop an agreed number of alternatives from a universe of options and meaningful implementation phases, which will satisfy the operational requirements and goals of the project. When required, conceptual layouts will be developed for major structures for each alternative, and will show satisfaction of the required span arrangement and the horizontal and vertical clearances. The alternatives shall address the project goals and objectives, account for impacts and any necessary roadway improvements and interchanges and the arterial system within the study area. Each alternative will include a discussion of individual component routes within that alternative, their capacities, and traffic impacts including current and future local access points on the arterial and highway system in the study area to maintain local planning consistency.
The Consultant shall then identify the reasonable alternatives that could be applied at I-70 and Kipling St.

The Consultant shall investigate interchange configurations that satisfy the project's goals and objectives. The alternative analysis will also analyze the type of interchange to be used. Conceptual layouts will be developed for each with all major structures both in plan and general profile views.

These alternatives shall respond to projected design year traffic volumes as developed in the traffic study data collection. The Consultant will evaluate the impacts of each alternative concept and the degree that each accomplishes the goals and objectives of the study. The appropriateness of each alternative will be reviewed and evaluated by the City of Wheat Ridge, the City of Arvada, CDOT, FHWA, and other jurisdictions as appropriate.

The Consultant shall complete an initial design of the alternatives decided upon by the City of Wheat Ridge, the City of Arvada, CDOT, FHWA, and other jurisdictions as appropriate. General profile and cross sections analysis will be developed for all critical areas to analyze each designated alternative. Information is to include general cut and fill limits, ROW and easement requirements, necessary earthwork and structural construction requirements. The design parameters, such as design speed, maximum grades, and typical section will be determined at the beginning and used on each alternative. The Consultant shall prepare the conceptual design for each interchange configuration including alignments, construction detours that will be needed, and major structural requirements so that a conceptual cost estimate can be developed. The cost estimate is to include design costs, ROW identification and acquisition, and construction costs.

c. Screen Alternatives _____ X

The Consultant shall utilize a NEPA-appropriate screening process on the universe of alternatives to identify the feasible and significantly different alternatives, which will be later subject to a more detailed NEPA environmental assessment. The purpose of this screening is to eliminate the obviously infeasible alternatives or alternatives that do not meet the Purpose and Need. The Consultant shall develop NEPA-appropriate evaluation criteria and submit them for review and approval by CDOT and FHWA prior to beginning the screening process. The rationale for elimination shall be thoroughly discussed within the NEPA documentation for those alternatives that are eliminated from further consideration.

The No-Action Alternative must be defined and carried through the entire evaluation and assessment process. For each alternative that passes the screening process, the Consultant shall incorporate preliminary design to a level that clearly allows the identification of effects on each environmental area listed below. Unless otherwise indicated, the Consultant is responsible for all of the following EA activities on each of the alternatives that pass the screening process:

A preliminary screening process will be used on the universe of alternatives to identify a limited number of feasible and significantly different alternatives, which will be subject to more detailed evaluation in the "Test Alternatives Analysis." The purpose of this screening is to eliminate the obviously infeasible or unsuitable alternates. All feasible and significantly different options shall be carried forward into more detailed analysis. These feasible and significantly different screened alternatives are to be presented in the first public workshop, and the public's opinion on what issues should be addressed during the detailed analysis of these alternatives is to be solicited. The criteria used in the preliminary screening shall be developed jointly with the City of Wheat Ridge, the City of Arvada, CDOT, FHWA, and other jurisdictions.

The Consultant shall perform a decision alternative analysis for each alternative interchange type. The decision alternative analysis shall utilize a decision matrix of compiled (data collection phase) information, using criteria developed and approved by the City of Wheat Ridge, the City of Arvada, CDOT, FHWA, and other jurisdictions as appropriate. The decision matrix criteria shall include design components, cost (financial analysis), social-economic, and environmental concerns. The decision alternative matrix will be compiled to show the differences between each alternative interchange location in a clear fashion (to be understood by the general public).

Environmental (air, noise, water quality, open space, etc.), historic and archaeological impacts, cost, engineering feasibility, construction staging options, transportation impacts, transit impacts, design year level of service and other performance measures, socioeconomic impacts and community acceptability, consistency with and/or impact on adopted plans, urban design issues and opportunities, and phasing of a improvements are examples of the considerations to be used in the screening process. The No-Build alternative must be carried through the entire evaluation and assessment process.

A limited number of design alternatives, will be described in a final design alternatives technical memorandum. For this limited set of alternatives, horizontal and vertical alignment studies, at a scale of 1"-200', will be conducted.

d. Preliminary Sketches _____ X

The Consultant shall develop preliminary sketch concepts of structures and landscape/streetscape improvements for the I-70 and Kipling St. interchange. The Consultant shall develop plan and elevation drawings of interchange structures with urban design features, planting masses, and plan access and development potential of adjacent areas

e. Before and After Views _____ X

The consultant shall develop a perspective view of each interchange type in a "before" and "after" illustration of existing features and proposed design.

f. Test Alternatives Analysis _____ X

Following the development of the short-list of alternatives, the Consultant shall perform a comprehensive test of each of the short-listed alternatives. This test shall utilize a decision process, which includes a compilation of all appropriate criteria. In addition to the socioeconomic and environmental concerns, the decision criteria shall include design standards. The criteria will be compiled in coordination with other activities. Following that, a decision matrix shall be created which combines a list of the alternatives under consideration with the results of the test with each criterion. The alternatives shall then be further developed with initial design and financial analysis.

g. Initial Design of Alternatives _____ X

Once the alternatives have been tested, general profile and cross section studies will be developed for critical areas to analyze the designated alternatives. This information shall be sufficient to determine general cut and fill limits, right-of-way and easement requirements, earthwork and structural requirements. Design parameters such as design speeds, maximum grades, typical sections, intersection and pedestrian routing will be determined at the beginning of the study.

The conceptual designs for the roadways, detours, phasing, and major structures will be completed sufficiently so that preliminary cost estimates can be developed and the satisfaction of pertinent design criteria can be demonstrated. Necessary variances will be identified.

The following shall be available following completion of the design:

- Plan and profile of roadways and detours
- Typical sections of roadways and detours
- Preliminary hydraulic recommendations
- Preliminary right-of-way requirements
- Recommended construction sequence
- Phasing opportunities

h. Financial Analysis of Alternatives

i Cost Estimate _____ X

A total cost estimate will be developed in whole or phases of improvement if feasible. Preliminary and final engineering, ROW, construction engineering, construction, and maintenance for the design life will be analyzed.

ii Funding Package _____ X

A funding package will be developed in whole or phases of improvement if feasible. The funding sources necessary to construct and maintain the project will be identified and evaluated for appropriateness and feasibility.

B. Feasible Alternatives Recommendation _____ X

A "Final Alternatives Report" will be submitted which documents the analysis process. This shall include the final staging plan, socioeconomic and environmental concerns, utility conflicts, drainage, and right-of-way requirements, and total cost for the recommended alternatives. The Consultant is responsible for ensuring that the recommended alternative(s) complies with applicable standards and criteria. Where appropriate, required variances will be identified.

A draft for the report shall be submitted for review and comment prior to the submittal of the final report.

C. Interim Improvements Operational Analysis _____ X

The Consultant shall complete the tasks listed in the Alternatives Analysis section on the previous pages in order to provide feasible alternatives to recommend and prioritize operational improvements for the existing interchange that may be implemented in phases that do not preclude the ultimate configuration.

~~4 **SYSTEM/PROJECT FEASIBILITY STUDY AND INTERCHANGE MANAGEMENT PLAN**~~

~~As part of the PEL process, the Consultant shall prepare a system and project feasibility study and interchange management plan for the I-70 and Kipling St. interchange analysis. This study shall be in accordance with CDOT's most recent Procedural Directive 1601. The Consultant shall make clear in any materials prepared as an official record and for distribution, that the NEPA process shall be followed, and that the Consultant and the Agencies have no preferred alternative which will influence their activities, to reach an appropriate conclusion under NEPA.~~

~~A. System Feasibility Study _____ X~~

~~The system feasibility study must consider, as a minimum, alternate routes, accident history, congestion, effects of interchange on the existing interstate and highway system, effects on the adjacent interchanges, economic development impact, and local commitment to improving local roadways. Key information from the data collection and alternatives analysis will be included in the feasibility study document. A draft study will be reviewed by the City of Wheat Ridge, the City of Arvada, CDOT, FHWA, and other jurisdictions as appropriate and then submitted to CDOT for review and comment prior to final submission. If it is determined that the system feasibility study will go to the Transportation Commission separately from the project feasibility study, the Consultant shall prepare the needed documentation and graphics, and present for approval before the Transportation Commission.~~

~~B. Project Feasibility Study _____ X~~

Either in conjunction with or following approval of the system feasibility study, a project level feasibility study shall be completed. In addition to refinement of items identified in the system feasibility study, the project feasibility study will determine precise location and extent of traffic impacts to the state transportation system. It will identify all necessary improvement alternatives to the interchange configuration at a conceptual design level, as well as any improvements to Kipling St. to accommodate the anticipated traffic. Preliminary engineering will be completed to the 20% to 30% level and total costs will be outlined at that level. Base mapping will be to one (1) foot contour interval resolution. All design standards will be addressed and agreed upon by WHEAT RIDGE, ARVADA, CDOT and FHWA. This feasibility study will be submitted to CDOT for review, and summarized in the Planning and Environmental Linkage Report.

C. Feasibility Study Report _____ X

This report will be prepared in accordance with Procedural Directive 1601 to obtain access approval from FHWA for the I-70 and Kipling St. interchange. The Consultant shall make clear in any materials prepared as an official record and for distribution, that the NEPA process shall be followed, and that the Consultant and the Agencies have no preferred alternative which will influence their activities, to reach an appropriate conclusion under NEPA. The report will include, as a minimum:

- Project purpose
- Relationship to other highway improvement plans and programs
- Distances to and size of communities or activities directly served
- Description of existing and proposed access:
    - Configuration of the existing and proposed interchange
    - Distances to adjacent interchanges
    - Alternatives that have been considered-description and layout
    - Description of any substandard features, with justification
    - Main line and crossroad traffic volumes (ADT), (DHV), including turning movements, for current year, implementation year, and design year
    - Number of main line and crossroad lanes; including any auxiliary lanes or C-D roads
- Traffic and operational analysis including crossroads and other roads and streets as required to assure their ability to effectively collect and distribute traffic from the new access. Operational analysis shall consider adjacent interchanges. Traffic simulation will likely be needed to present information and allow for analysis of the alternatives
- Any other information that might help explain and/or support the proposal, e.g., cost-effectiveness analysis, source of funding, implementation schedule, etc
- Plan and profile, interchange geometrics, typical sections, roadway alignments.
- Preliminary signing plan
- Construction Phasing

D. Interstate Access Request/Minor Interchange Modification Request _____ X

The consultant shall prepare an Interstate Access Request or a Minor Interchange Modification Request document as appropriate, using the results of the Feasibility Study and environmental analysis for submittal to FHWA.

SECTION 8

CONTRACT CONCLUSION (CHECKLIST)

1 SUPPLEMENTAL WORK

It is anticipated that this contract may be supplemented for additional study and/or design efforts above any assumed quantities noted in the current contract scope. Additional efforts will require CDOT approval prior to beginning any work efforts.

2 CONTRACT COMPLETION

This Contract will be satisfied upon acceptance of the following items if applicable:

1. Periodic Reports
2. Billings
3. Meeting Minutes
4. Project Management Plan
5. Project Schedule
6. Conceptual Design
7. Traffic Model
8. Feasibility Study report
9. Final Alternatives Report
10. System Feasibility Study-Interchange Approval Process
11. Preliminary Sketches
12. Before and After Views
13. Conceptual Design Plans
14. Cost estimate
15. Funding Package
16. Correspondence with Agencies, Entities, and Public
17. Safety Assessment

APPENDICES

A. REFERENCES

B. DEFINITIONS

C. PEL QUESTIONNAIRE

Comments regarding this scope may be directed to:

David Wells

CDOT Agreements Office,

(303)757-9400

APPENDIX A
REFERENCES

1 **AMERICAN ASSOCIATON OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) PUBLICATIONS** (using latest approved versions):

A. A Policy on Design Standards-Interstate System

B. A Policy on Geometric Design of Highways and Streets

C. Guide for Design of Pavement Structures

D. Standard Specifications for Highway Bridges

E. Guide for the Design of High Occupancy Vehicle and Public Transfer Facilities

F. Guide for the Development of Bicycle Facilities

G. Standard Specifications for Transportation Materials and Methods of Sampling and Testing – Part 1, Specifications and Part II, Tests

H. Highway Design and Operational Practices Related to Highway Safety

I. Roadside Design Guide

2 **COLORADO DEPARTMENT OF TRANSPORATION PUBLICATIONS** (using latest approved versions):

A. CDOT Design Guide (all volumes)

B. CDOT Bridge Design Guide

C. CDOT Bridge Detailing Manual

D. Bridge Rating Manual

E. Project Development Manual

F. Erosion Control and Storm Water Quality Guide

G. Field Log of Structures

H. Cost Data Book

I. Drainage Design Manual

J. CDOT Quality Manual

K. CDOT Survey Manual

L. CDOT Field Materials Manual

M. CDOT Design Guide, Computer Aided Drafting (CAD)

N. Standard Plans, M & S Standards

O. Standard Specifications for Road and Bridge Construction and CDOT Supplemental Specifications

P. Item Description and Abbreviations (with code number) compiled by Engineering Estimates and Marked Analysis Unit, CDOT

Q. Right-of-Way Manual, Chapter 2, Plans and Descriptions Procedures and General Information

R. The State Highway Access Code

APPENDIX A

REFERENCES (CONTINUED)

S. Utility Manual

T. TMOSS Generic Format

U. Field TMOSS Topography Coding

V. Topography Modeling Survey System User Manual

W. Interactive Graphics System Symbol Table

3 **CDOT PROCEDURAL DIRECTIVES** (using latest approved versions):

A.	No. 400.2	Monitoring Consultant Contracts
B.	No. 501.2	Cooperative Storm Drainage System
C.	No. 514.1	Field Inspection Review (FIR)
D.	No. 516.1	Final Office Review (FOR)
E.	No. 1217a	Survey Request
F.	No. 1304.1	Right-of-Way Plan Revisions
G.	No. 1305.1	Land Surveys
H.	No. 1601	Interchange Approval Process
I.	No. 1700.1	Certification Acceptance (CA) Procedures for Location and Design Approval
J.	No. 1700.3	Plans, Specifications and Estimates (PS&E) and Authorization to Advertise for Bids under Certifications Acceptance (CA)
K.	No. 1700.5	Local Entity/State Contracts and Local Entity/Consultant Contracts and Local Entity/R.R. Contracts under C.A
L.	No. 1700.6	Railroad/Highway Contracts (Under Certification Acceptance)
M.	No. 1905.1	Preparation of Plans and Specifications for Structures prepared by Staff Bridge Branch

4 **FEDERAL PUBLICATIONS** (using latest approved versions):

A. Manual on Uniform Traffic Control Devices

B. Highway Capacity Manual

C. Urban Transportation Operations Training – Design of Urban Streets, Student Workbook

D. Reference Guide Outline – Specifications for Aerial Surveys and Mapping by Photogrammetric Methods for Highways

E. FHWA Federal-Aid Policy Guide

F. Technical Advisory T6640.8A

G. U.S. Department of Transportation Order 5610.1E

H. Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques

I. ADAAG Americans With Disabilities Act Accessibility Guidelines

5 **TRANSPORATION RESEARCH BOARD**:

A. Access Management Manual

APPENDIX B

DEFINITIONS

1	AASHTO-	American Association of State Highway & Transportation Officials
2	ADT-	Average two-way 24-hour Traffic in Number of Vehicles
3	AREA-	American Railway Engineering Association
4	ATSSA-	American Traffic Safety Services Association
5	AT&SF-	Atchison, Topeka & Santa Fe Railway Company
6	ADAAG-	Americans with Disabilities Accessibility Act Guidelines
7	BAMS-	Bid Analysis and Management Systems
8	BLM-	Bureau of Land Management
9	BNRR-	Burlington Northern Railroad
10	CA-	Contract Administrator. The CDOT Manager responsible for the satisfactory completion of the contract by the consultant.
11	CAP-	CDOT's Action Plan
12	CBC-	Concrete Box Culvert
13	CDOT-	Colorado Department of Transportation
14	CDOT/PM-	Colorado Department of Transportation Project Manager – The CDOT Engineer responsible for the day to day direction and CDOT Consultant coordination of the design effort.
15	CDOT/STR-	Colorado Department of Transportation Structure Reviewer – The CDOT Engineer responsible for reviewing and coordinating major structural design
16	CDPHE-	Colorado Department of Public Health and Environment
17	CEQ-	Council on Environmental Quality
18	COG-	Council of Governments
19	COGO-	Coordinate Geometry Output
20	CONSULTANT-	Consultant for this project
21	CONTRACT ADMINISTRATOR-	Typically a Region Engineer or Branch Head. The CDOT employee directly responsible for the satisfactory completion of the contract by the Consultant. The contract administration is usually delegated to a CDOT Project Manager.

APPENDIX B

DEFINITIONS (CONTINUED)

22	C/PM-	Consultant Project Manager – The Consultant Engineer responsible for combining the various inputs in the process of completing the project plans and managing the Consultant design effort.
23	DEIS-	Draft Environmental Impact Statement
24	DHV-	Future Design Hourly Volume (two-way unless specified otherwise)
25	DRCOG-	Denver Regional Council of Governments
26	D&RGW-	Denver & Rio Grande Western Railroad
27	EA-	Environmental Assessment
28	EIS-	Environmental Impact Statement
29	ESAL-	Equivalent Single Axle Load
30	ESE-	Economic, Social and Environmental
31	FEIS-	Final Environmental Impact Statement
32	FEMA-	Federal Emergency Management Agency
33	FHPG-	Federal Aid Highway Policy Guide
34	FHWA-	Federal Highway Administration
35	FIPI-	Finding In Public Interest
36	FIR-	Field Inspection Review
37	FONSI-	Finding of No Significant Impact
38	FOR-	Final Office Review
39	GPS-	Global Positioning System
40	MAJOR STRUCTURES-	Bridges and culverts with a total clear span length greater than twenty feet. This length is measured along the centerline of roadway for bridges and culverts, from abutment face to abutment face, Retaining structures are measured along the horizontal distance along the top of the wall. Structures with exposed heights at any section over five feet and total lengths greater than a hundred feet as well as overhead structures including (bridge signs, cantilevers and butterflies extending over traffic) are also considered major structures.

APPENDIX B

DEFINITIONS (CONTINUED)

41	MPO-	Metropolitan Planning Organization (i.e. Denver Regional Council of Governments, Pikes Peak Area Council of Governments, Grand Junction MPO, Pueblo MPO, and North Front Range Council of Governments).
42	MS4-	Municipal Separate Storm Sewer System
43	NEPA-	National Environment Policy Act
44	NGS-	National Geodetic Survey
45	NICET-	National Institute for Certification in Technology
46	NOAA-	National Oceanic and Atmospheric Administration
47	PAPER SIZES-	See Computer-Aided Drafting Manual (CDOT); Table 6-13 and Table 8-1
48	PE-	Professional Engineer registered in Colorado
49	PM-	Program Manager
50	PLS-	Professional Land Surveyor registered in Colorado
51	PRT-	Project Review Team
52	PS&E-	Plans, Specifications and Estimate
53	PROJECT-	The work defined by this scope
54	ROR-	Region Office Review
55	ROW-	Right-of-Way: A general term denoting land, property, or interest therein, usually in a strip acquired for or devoted to a highway
56	ROWPR-	Right-of-Way Plan Review
57	RTD-	Regional Transportation Director
58	T/E-	Threatened and/or Endangered Species
59	SH-	State Highway Numbers
60	TMOSS-	Terrain Modeling Survey System
61	TOPOGRAPHY-	In the context of CDOT plans, topography normally refers to existing cultural or man-made details.
62	UD & FCD-	Urban Drainage and Flood Control District
63	USCOE-	United States Army Corp of Engineers

Note: For other definitions and terms, refer to Section 101 of the CDOT Division of Highways Standard Specifications for Road and Bridge Construction and the CDOT Design Guide.

APPENDIX C

PEL QUESTIONNAIRE

This questionnaire is intended to act as a summary of the Planning process and ease the transition from the planning study to a NEPA analysis. Often, there is no overlap in personnel between the planning and NEPA phases of a project, and much (or all) of the history of decisions, etc., is lost. Different planning processes take projects through analysis at different levels of detail. Without knowing how far, or in how much detail a planning study went, NEPA project teams often re-do work that has already been done. Planning teams need to be cautious during the alternative screen process; alternative screening should focus on purpose and need/corridor vision, fatal flaw analysis and possibly mode selection. This may help minimize problems during discussions with resource agencies. Alternatives that have fatal flaws or do not meet the purpose and need/corridor vision cannot be considered viable alternatives, even if they reduce impacts to a particular resource. This questionnaire is consistent with the 23 CFR 450 (Planning regulations) and other FHWA policy on Planning and Environmental Linkage process.

Instructions: These questions should be used as a guide throughout the planning process, not just answered near completion of the process. When a PEL study (i.e. corridor study) is started, this questionnaire will be given to the project team. Some of the basic questions to consider are: "What did you do?", "What didn't you do?" and "Why?" When the team submits the study to FHWA for review, the completed questionnaire will be included with the submittal. FHWA will use this questionnaire to assist in determining if an effective PEL process has been applied before NEPA processes are authorized to begin. The questionnaire should be included in the planning document as an executive summary, chapter, or appendix.

1. Background:
   What is the name of the PEL document and other identifying project information (e.g. sub-account or STIP numbers)?
   a. Provide a brief chronology of the planning activities (PEL study) including the year(s) the studies were conducted.
   b. Provide a description of the existing transportation corridor, including project limits, modes, number of lanes, shoulder, access control and surrounding environment (urban vs. rural, residential vs. commercial, etc.)
   c. Who was the sponsor of the PEL study? (CDOT, Local Agency, Other)
   d. Who was included on the study team (Name and title of agency representatives, consultants, etc.)?
   e. Are there recent, current or near future planning studies or projects in the vicinity? What is the relationship of this project to those studies/projects?
2. Methodology used:
. Did you use NEPA-like language? Why or why not?
   a. What were the actual terms used and how did you define them? (Provide examples or list)
   b. How do you see these terms being used in NEPA documents?
   c. What were the key steps and coordination points in the PEL decision-making process? Who were the decision-makers and who else participated in those key steps? For example, for the corridor vision, the decision was made by CDOT and the local agency, with buy-in from FHWA, the Corps, and USFWS.
   d. How should the PEL information below be presented in NEPA?
3. Agency coordination:
. Provide a synopsis of coordination with federal, tribal, state and local environmental, regulatory and resource agencies. Describe their level of participation and how you coordinated with them.
   a. What transportation agencies (e.g. for adjacent jurisdictions) did you coordinate with or were involved in the PEL study?
   b. What steps will need to be taken with each agency during NEPA scoping?
4. Public coordination:
. Provide a synopsis of your coordination efforts with the public and stakeholders.
5. Corridor Vision/Purpose and Need:
. What was the scope of the PEL study and the reason for doing it?
   a. Provide the corridor vision, objectives, or purpose and need statement.
   b. What steps will need to be taken during the NEPA process to make this a project-level purpose and need statement?
6. Range of alternatives considered, screening criteria and screening process:
. What types of alternatives were looked at? (Provide a one or two sentence summary and reference document.)
   a. How did you select the screening criteria and screening process?

APPENDIX C
PEL QUESTIONNAIRE (CONTINUED)

b. For alternative(s) that were screened out, briefly summarize the reasons for eliminating the alternative(s). (During the initial screenings, this generally will focus on fatal flaws)
c. Which alternatives should be brought forward into NEPA and why?
d. Did the public, stakeholders, and agencies have an opportunity to comment during this process?
e. Were there unresolved issues with the public, stakeholders and/or agencies?

7. Planning assumptions and analytical methods:
. What is the forecast year used in the PEL study?
    a. What method was used for forecasting traffic volumes?
    b. Are the planning assumptions and the corridor vision/purpose and need statement consistent with the long-range transportation plan?
    c. What were the future year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs and network expansion?
8. Resources (wetlands, cultural, etc.) reviewed. For each resource or group of resources reviewed, provide the following:
. In the PEL study, at what level of detail was the resource reviewed and what was the method of review?
    a. Is this resource present in the area and what is the existing environmental condition for this resource?
    b. What are the issues that need to be considered during NEPA, including potential resource impacts and potential mitigation requirements (if known)?
    c. How will the data provided need to be supplemented during NEPA?
9. List resources that were not reviewed in the PEL study and why? Indicate whether or not they will need to be reviewed in NEPA and explain why.
10. Were cumulative impacts considered in the PEL study? If yes, provide the information or reference where it can be found.
11. Describe any mitigation strategies discussed at the planning level that should be analyzed during NEPA.
12. What needs to be done during NEPA to make information from the PEL study available to the agencies and the public? Are there PEL study products which can be used or provided to agencies or the public during the NEPA scoping process?
13. Are there any other issues a future project team should be aware of?
. Examples: Utility problems, access or ROW issues, encroachments into ROW, problematic land owners and/or groups, contact information for stakeholders, special or unique resources in the area, etc.